



**A Business Partnership with Cooperative Education**  
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**Science & Technology Education Program Internship Opportunities**

Technically, LLNL is a premiere applied-science national security laboratory. Established in 1952 to help ensure national security through the design, development, and stewardship of nuclear weapons, LLNL made major advances in nuclear weapons safety and performances throughout the Cold War. To address national security needs, the Laboratory pioneered the application of technologies ranging from high-performance computers to advanced lasers and it gained multi-program responsibilities that drew on the Laboratory's multidisciplinary expertise. Today, LLNL's primary mission is to help ensure that the nation's nuclear weapons remain safe, secure, and reliable and to prevent the spread and use of nuclear weapons worldwide. This mission enables Livermore's programs in advanced defense technologies, energy, environment, bio-sciences, and basic science to apply LLNL's unique capabilities, and to enhance the competencies needed for the Laboratory's national security mission. LLNL serves as a resource to U.S. government and as a partner with industry and academia.

Educationally, LLNL has been involved in internships since the fall of 1992 with a program called Science & Engineering Research Semester (SERS). SERS no longer exists but has been re-engineered as the Undergraduate Research Semester (URS) and exists at LLNL and its sister labs, Sandia National Laboratories (located in Livermore, California and Albuquerque, New Mexico) and Los Alamos National Laboratory in Las Alamos, New Mexico. URS is a fall or spring internship, allowing participants to gain hands-on experience in a state-of-the-art research facility. More than half of the participants combine their experience with a summer term with some becoming recipients of graduate fellowships as a result of their LLNL experience.

In addition to the experience, students participate in seminars (some with lab tours), local field trips, present a poster and oral presentation and write a research paper with abstract. In preparation for these requirements, the students participate in classes for design and delivery, poster preparation, scientific writing, and a research process course. Although the immersion in research is highly valued, so is the educational component to help the student become a better researcher.

Since 1992, the Science & Technology Education Program or STEP runs a number of other programs which support the Department of Energy's interest to increase the awareness of students to future careers. These programs are funded by the Department of Energy, Office of Defense Programs, Science Education. Another such program is the Actinide Science Summer School Program (ASSSP). This is an eight week internship during the summer for students interested in the actinide sciences. Still another initiative is a pilot with Northern Arizona University and expanding to include California State University, Hayward. This program seeks to acquire the participation of undergraduate and graduate students (with a focus on Native Americans and other under represented groups) and women in the emergence of the new scientific methodology of high performance computer-based modeling and simulation, the development of Internet technologies associated with simulation such as visualization, and the experimentation with distance learning and telecommuting technologies such as collaboration

or tele-presence tools. This is being accomplished through a capstone program and summer internships called the Accelerated Strategic Computing Initiative (ASCI) Pipe Program.

As a national security laboratory, LLNL continues to seek ways to strengthen the relationship between the Laboratory and the Department of Defense. A recent educational initiative, the Military Academic Research Associates (MARA) program, is a step in this direction. The program is currently focussed on cadets and midshipman from the United States Military, Naval, and Air Force Academies and is presently being expanded to include the Coast Guard Academy and the Reserve Officer Training Corps (ROTC). We have designed the program to provide science-oriented, work-study internship opportunities for the participating students. Projects focus on national security issues and include such areas as stockpile stewardship, counterproliferation, advanced manufacturing, space operations, and laser technologies.

Our Research Collaborations Program was initiated in 1994 as an outgrowth of an effort to foster productive and mutually beneficial technical interactions between the Laboratory and the nation's Historically Black Colleges and Universities (HBCUs). This initiative has since expanded to include Hispanic Serving (HIS) and Minority Institutions (MI). The goal of the Research Collaborations Program (RCP) is to establish scientific collaborations between accomplished research faculty at HBCU's/HIS's/MI's and Principal Investigators at LLNL, in areas of LLNL Core Competencies.

In summary, why is LLNL - STEP as actively involved in internships and with the CCEA today versus any time in the past? The answer is in LLNL's mission of national security and need to increase the awareness of undergraduate students of Defense Program future careers. In the case of MARA and the Defense Program ROTC internships, which has a different objective, let me quote our Assistant Associate Director for Military Affairs, "the MARA/ROTC program is enormously successful. Today's cadets and midshipmen are the next generation of leaders for their respective services. What they learn here will help shape their future ability to understand the broader defense capabilities of the - including those which reside at Lawrence Livermore National Laboratory."

For more information on STEP's internship programs, feel free to access the following URL's:

- Undergraduate Research Semester <http://education.llnl.gov/urs/>
- Actinide Science Summer School Program <http://education.llnl.gov/asp/>
- Military Academic Research Associates <http://education.llnl.gov/mara/>
- Research Collaborations Program for Historically Black Colleges and Universities, Hispanic Serving and Minority Institutions <http://www.llnl.gov/urp/HBCU/homepage.html>
- LLNL Science & Technology Education Program Web Page <http://education.llnl.gov/>
- LLNL Education Directory <http://education.llnl.gov/student/>
- LLNL Web Page <http://www.llnl.gov/>

Additional information on:

- Summer Employment Program <http://www.llnl.gov/jobs/SEP/>
- Undergraduate Summer Institute <http://www.llnl.gov/usi/>

Graduate Programs:

- LLNL Postdoctoral Fellowship Program <http://www.llnl.gov/urp/LLNLPostDoc/LLNLPostDoc.htm>
- LLNL/UC Davis Graduate Fellowship <http://www.llnl.gov/urp/Sefellowship/sefellow.home.html>
- National Physical Science Consortium <http://www.llnl.gov/urp/NPSC/NPSC.html>

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